**IN THE CLAIMS:**

1-10. (Cancelled)

11. (Currently Amended) A method of dynamically controlling and managing operating characteristics of a fuel cell system, ~~including the steps of~~comprising:

(A) providing a DC-DC converter circuit having an input connection to receive the output of a fuel cell, and connected to place a load across the fuel cell, said DC-DC converter circuit having internal switches that are operated at a duty cycle that is adjustable;

(B) providing a programmable controller that receives as an input, present and stored values of one or more operating characteristics, said programmable controller also being programmed to signal said DC-DC converter switches to adjust its duty cycle;

(C) identifying a weakest cell in a fuel cell stack;

(D) measuring the output voltage of the weakest cell;

(E) dynamically determining a desired value for said output voltage;

(F) comparing a present value of said weakest cell output voltage with a desired value;

(G) calculating a new duty cycle for the associated DC-DC converter within the fuel cell system required to substantially achieve said desired value for the output voltage of the weakest cell; and

(H) signaling said DC-DC converter to adjust its duty cycle to said new duty cycle.

12-14. (Cancelled)

15. (Currently Amended) A method of dynamically controlling and managing operating characteristics of a fuel cell system used to power a battery or an application device, ~~including the steps of~~comprising:

(A) providing a DC-DC converter circuit having an input connection to receive the output of a fuel cell, and connected to place a load across the fuel cell, said DC-DC converter circuit having internal switches that are operated at a duty cycle that is adjustable;

(B) providing a programmable controller that receives as an input, present and stored values of one or more operating characteristics, said programmable controller also being programmed to signal said DC-DC converter switches to adjust its duty cycle;

(C) dynamically determining a desired value for a plurality of operating characteristics of the fuel cell system, depending upon the operating conditions of the fuel cell system;

(D) measuring said plurality of operating characteristics;

(E) dynamically determining an output power of the fuel cell stack that does not exceed a maximum power needed by at least one of the battery or the application device being powered by the system, but maintains said desired values of said operating characteristics;

(F) comparing a present value of said output power with a desired value;

(G) calculating a new duty cycle for the associated DC-DC converter within the fuel cell system required to substantially achieve said desired value for the output power; and

(H) signaling the DC-DC converter to adjust its duty cycle to said new duty cycle.

16. (Currently Amended) A method of controlling a fuel cell system, ~~including the steps of~~comprising:

(A) dynamically determining desired values for a plurality of operating characteristics being monitored in a current mode of operation of a fuel cell system;

(B) measuring each of said selected operating characteristics;

(C) determining a duty cycle required to substantially achieve each individual desired value and storing each duty cycle;

(D) comparing stored values and selecting the minimum duty cycle; and

(E) using this duty cycle as the new duty cycle of the DC-DC converter circuit switches within said fuel cell system.

17. (Currently Amended) The method as defined in claim 16 ~~including the further step of~~further comprising:

periodically repeating determining the desired values and the measurements and updating the duty cycle.

18. (Cancelled)

19. (Currently Amended) A method of dynamically controlling and managing temperature in a fuel cell system, ~~including the steps of~~comprising:

(A) measuring the stack output voltage of the fuel cell system;

(B) determining whether the stack output voltage is at a desired value depending upon the present desired temperature range of the fuel cell system, for the present operating conditions, and

(C) adjusting the duty cycle of an associated DC-DC converter to change the output stack voltage to substantially the desired value.

20. (Cancelled)